ANNUAL REPORT FOR 2002

Mildred Woods Mitigation Site
Edgecombe County
Project No. 6.09902T
TIP No. R-2111/R-2112A

Office of Natural Environment & Roadside Environmental Unit
North Carolina Department of Transportation
December 2002/March 2003 (Revised)

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SUMMARY

The following report summarizes the monitoring activities that have occurred in the past year at the Mildred Woods Mitigation Site. Designed as mitigation for impacts associated with new construction on US 64 in Edgecombe County, the site encompasses 593 acres, with plant communities reestablished on 372 acres. This site was originally constructed in 1995 and planted between January and February 1996. Due to issues with flooding on an adjacent property, and the structural integrity of a culvert on US 64, NCDOT requested and received a modification approval for the mitigation site. The initial plan called for a concrete riser that would control water elevations adjacent to the borrow pit. After further review of the borrow pit area, it was decided instead to armor the existing outlet ditch for stabilization and not to construct the concrete riser (See Appendix C). It was determined that the current outlet elevation of the pond was not adversely affecting the upstream culvert, and this would maintain the existing site hydrology. This work was completed in mid-June 2002 and did not change the overall site hydrology. Thus monitoring continued as normal in 2002; hydrologic and vegetation monitoring have been conducted for a total of seven years.

A total of 76 groundwater monitoring gauges and two rain gauges are used to monitor the site's groundwater levels and rainfall amounts, respectively. The success criteria for these gauges vary dependent upon location; gauges that are expected not to meet jurisdictional success are in place in order to verify wetland areas. Hydrologic monitoring indicated that of the 76 gauges at the site, 53 gauges either met or exceeded their respective hydrologic expectations. Upon reviewing previous data, it can be seen that gauges meeting their expected hydrology in years past are continuing to meet their expected hydrology.

Of the 593 acres of this site, approximately 372 involved tree planting. There were 20 plots established throughout the planting areas, encompassing all plant communities. The 2002 vegetation monitoring of the planted area revealed an average density of 513 trees per acre, which is well above the 320 trees per acre required by the minimum success criteria.

In summer 2002, NCDOT performed a delineation of the Mildred Woods site. Gauge data from previous years was initially used to determine areas of the site that were wet and dry. Based on maps developed from this gauge data, these lines denoting wet areas were field-verified using hydric soil indicators. NCDOT then used this delineation map to perform tree counts of nuisance species (red maple, sweet gum, and pine) within the wet areas of the site. The new delineation map is provided within this report.

NCDOT will develop a proposal for the nuisance vegetation per discussions at field meetings with resource agency personnel. Once agency concurrence is obtained, the proposal will be implemented in 2003 in order to finalize/ close this site.

1.0 INTRODUCTION

1.1 Project Description

As part of a mandate to improve the North Carolina Intrastate System, US 64 was extended on new location from the US 64/258/NC 44 Interchange south of Tarboro to a location west of Everetts at the US 64/SR 1405. The Mildred Woods Mitigation Site was created to compensate for unavoidable wetland losses incurred during roadway construction.

Located in Edgecombe County, the site is approximately three miles east of Tarboro. It encompasses approximately 593 acres and is situated near the Tar River, immediately adjacent to the newly constructed US 64 (Figure 1). Wetland plant communities will be reestablished on approximately 372 of the 593 acres. Plant communities include swamp forest (37 acres), Atlantic white cedar (2 acres), wet hardwood forest (214 acres), oak-hickory forest (108 acres), and long leaf pine-oak/hickory forest (11 acres). The site was constructed in 1995, and it was first monitored for both hydrology and vegetation in 1996. Work to stabilize the entrance of an outlet ditch on the south side of the existing borrow lake was completed during the 2002 growing season. As the work did not interfere with the overall site hydrology, monitoring continued in 2002 for a seventh year.

1.2 Purpose

In order to demonstrate successful mitigation, vegetative and hydrologic monitoring will be conducted for a minimum of three years. The following report details the results of hydrologic and vegetative monitoring during 2002, the seventh year of monitoring. Included in this report is the following: analyses of site data and local climate conditions during the growing season, site photographs, and maps of both hydrologic and vegetation monitoring areas.

1.3 Project History

Summer 1995	Construction - Ditches plugged and filled
Sept.-Oct. 1995	KG Shearing/Piling
Jan.-Feb. 1996	Tree Planting
February 1996	Monitoring Gauges Installed
March- November 1996	Hydrologic Monitoring (1 yr.)
October 1996	Vegetation Monitoring (1 yr.)
March 1997	Additional Monitoring Gauges Installed
March- November 1997	Hydrologic Monitoring (2 yr.)
August 1997	Vegetation Monitoring (2 yr.)
March- November 1998	Hydrologic Monitoring (3 yr.)
September 1998	Vegetation Monitoring (3 yr.)
February 1999	Additional gauges installed
March- November 1999	Hydrologic Monitoring (4 yr.)
October 1999	Vegetation Monitoring (4 yr.)
March- November 2000	Hydrologic Monitoring (5 yr.)
October 2000	Vegetation Monitoring (5 yr.)
March 2001	North side ditch flow diverted to SR 1523
March- November 2001	Hydrologic Monitoring (6 yr.)
October 2001	Vegetation Monitoring (6 yr.)
March- November 2002	Hydrologic Monitoring (7 yr.)
June 2002	Stabilization of Borrow Pit Outlet
Summer 2002	Site Delineation
August 2002	Vegetation Monitoring (7 yr.)

1.4 Debit Ledger

Table 1 is the current debit ledger for the Mildred Woods Site. The new delineation map (Figure 2) was used to update the acreage of wetlands delineated, uplands, and wetland acreage debited for roadway projects. Table 2 summarizes the total acreage of the dry areas; these are not included in the debited area of the site.

Figure 1. Site Location Map

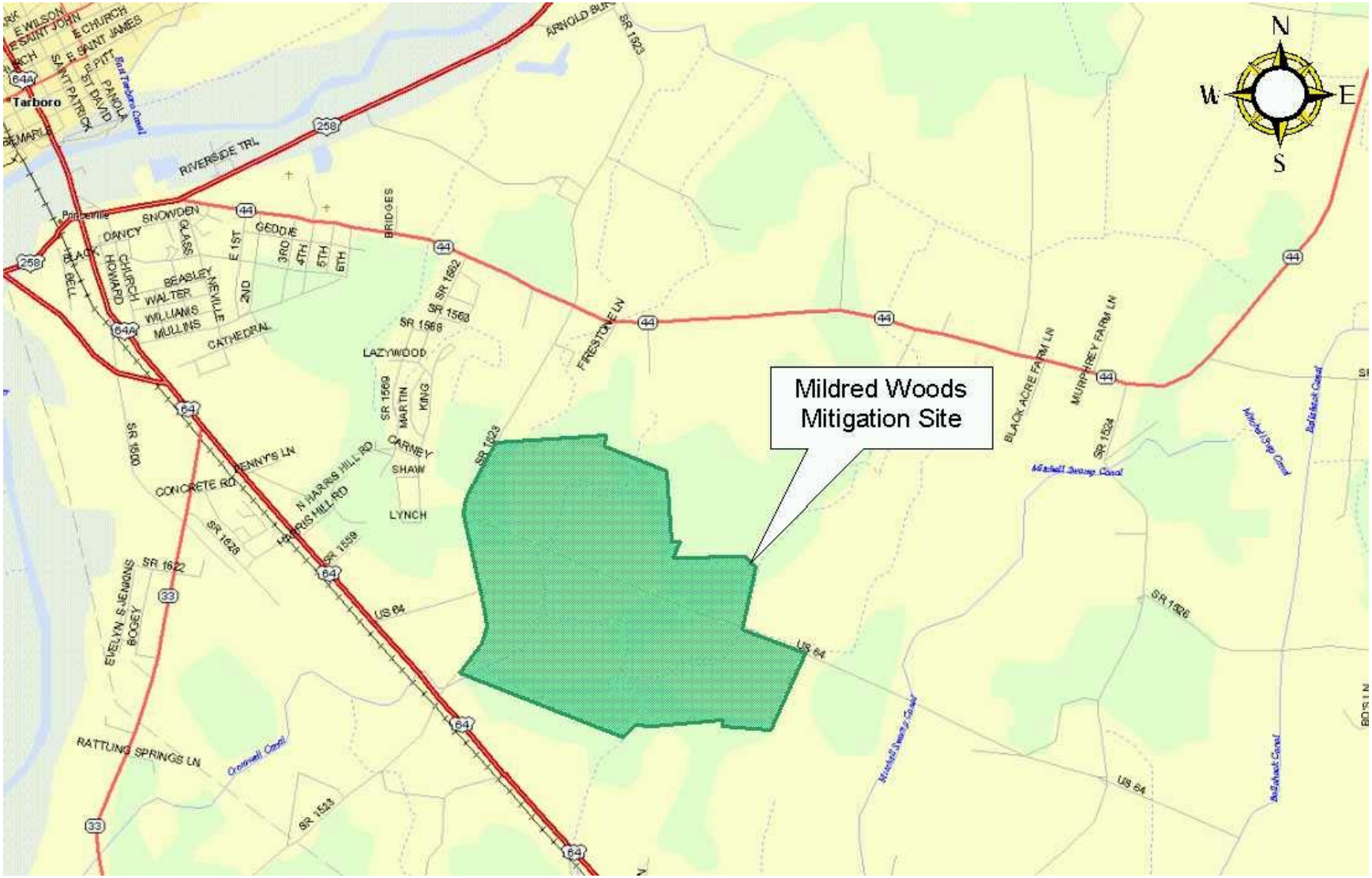


Table 1. Mildred Woods Mitigation Site Debit Ledger

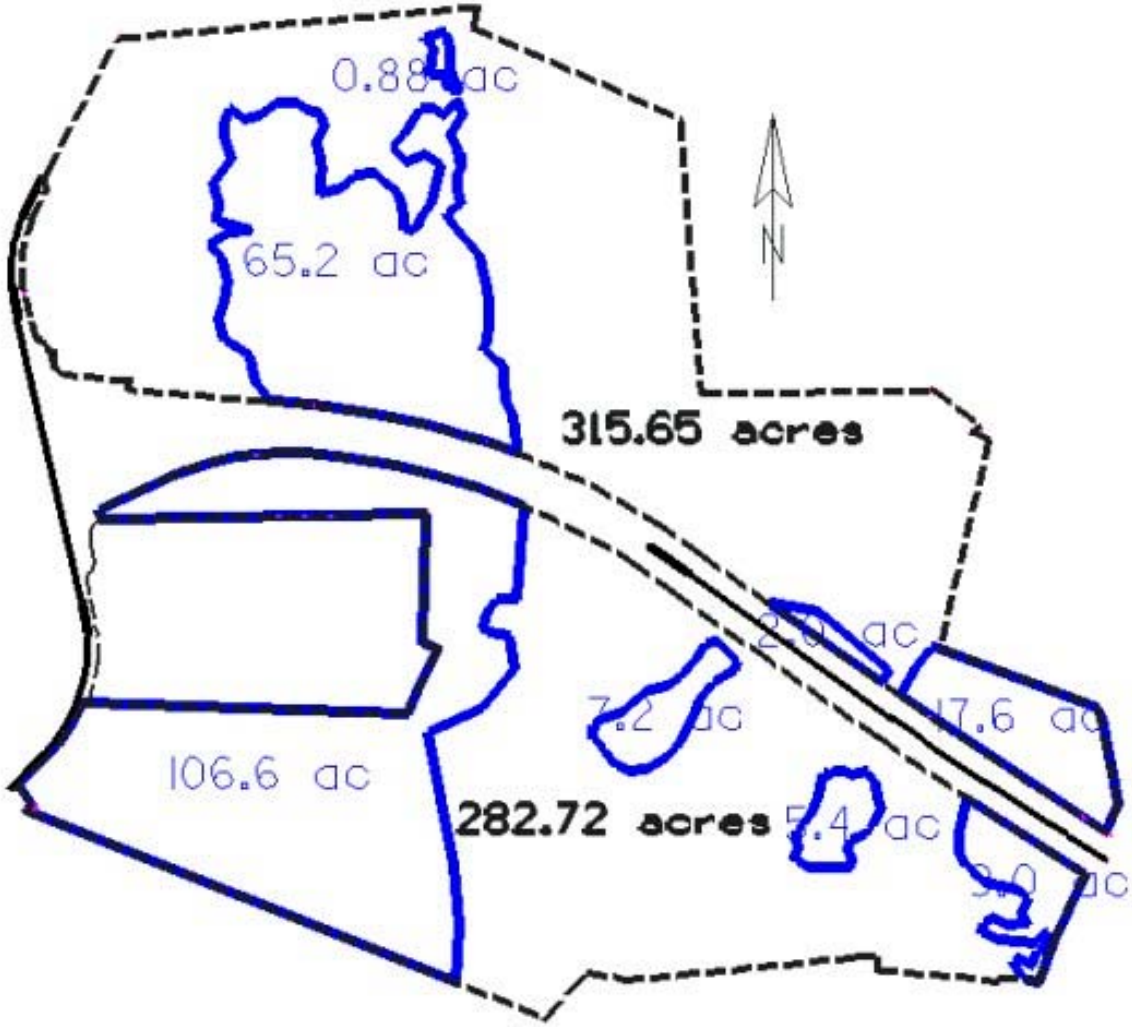
Site Habitat	Mitigation Plan			TIP Debit					
	Acres at Start	Acres Remaining	Percent Remaining	R-509GB, R-2111& R-2112A	R-2112B	Alterations*	U-2218*†	U-2720*†	B-2980
BLH Restoration	369.00	129.00	34.96	217.00	23.00	23.50	21.41		
SPH Restoration	26.00	23.00	88.46					6.00	3.00
Preservation	23.00	8.00	34.78		15.00				
Upland Mgmnt	200.00	N/A	--						
Total**	**418.00**	**160.00**	**38.28**						

SPH: Swamp Hardwood BLH: Bottomland Hardwood *: hydrologic modifications under review by US Army Corps of Engineers
†: Proposed **: Excludes management habitat

Table 2. NCDOT Delineation Results- Mildred Woods

Section (Corresponding to Placed Gauges)	New Upland Acreage
2	65.2
2	0.88
5	2.0
5	17.6
3,10	106.6
4	7.2
4	5.4
8	9.0
Total Upland Acreage	213.9
Total Wet Acreage (593 Ac Total-Upland)	379.1

Figure 2. Mildred Woods Delineation Map (sections shown to be dry noted in blue, with acreage)



2.0 HYDROLOGY

2.1 Success Criteria

Hydrological success criteria include saturation or inundation (within 12" of surface) for at least 12.5% of the growing season at lower landscape positions during average climatic conditions. Upper landscape areas of the wetland restoration areas may exhibit surface saturation/inundation for between 5% and 12.5% of the growing season based on gauge data. Several monitoring gauges were placed at locations where saturation is expected to be less than 5% of the growing season, in order to aid in the delineation of true wetland area. Table 3 summarizes the wetland criteria expected for each monitoring gauge by showing which gauges in each section are expected to meet which criteria.

The growing season in Edgecombe County begins March 21 and ends November 10. These dates correspond to a 50% probability that air temperatures will drop to 28^{o} F or lower after March 21 and before November 10.[1] Thus, the growing season is 233 days; optimum wetland hydrology requires 12.5%, or a consecutive 29 days. However, the site must also experience average climatic conditions for the data to be valid.

Table 3. Individual Gauge Success Criteria

Expected % of the Growing Season with Saturated Conditions			
Table Number	**< 5%**	**5 - 12.5%**	**> 12.5%**
Table 5	6,7		1 – 5, 15C – 18C
Table 6	10		8, 9
Table 7		19C,21C	11 – 15
Table 8	16	17,29C	18, 20C, 26C – 28C
Table 9	27	26,1C,2C	19 - 25,3C – 5C,7C,8C
Table 10			28, 29
Table 11		30,31,32,33, 23C	22C
Table 12		34,35,36,37,38,39,31C, 32C	
Table 13		30C	40, 25C
Table 14	41	24C	
Table 15			42, 11C-14C, 33C
Table 16		6C, 9C	43, 10C

[1] Soil Conservation Service, Soil Survey of Edgecombe County, North Carolina, 1979.

2.2 Hydrologic Description

Seventy-six monitoring gauges and two rain gauges were installed on site in between 1996 and 2000 (Figure 3). The automatic monitoring gauges and rain gauges record depth to groundwater and rainfall, respectively. Daily readings of groundwater levels and rainfall totals are taken throughout the growing season.

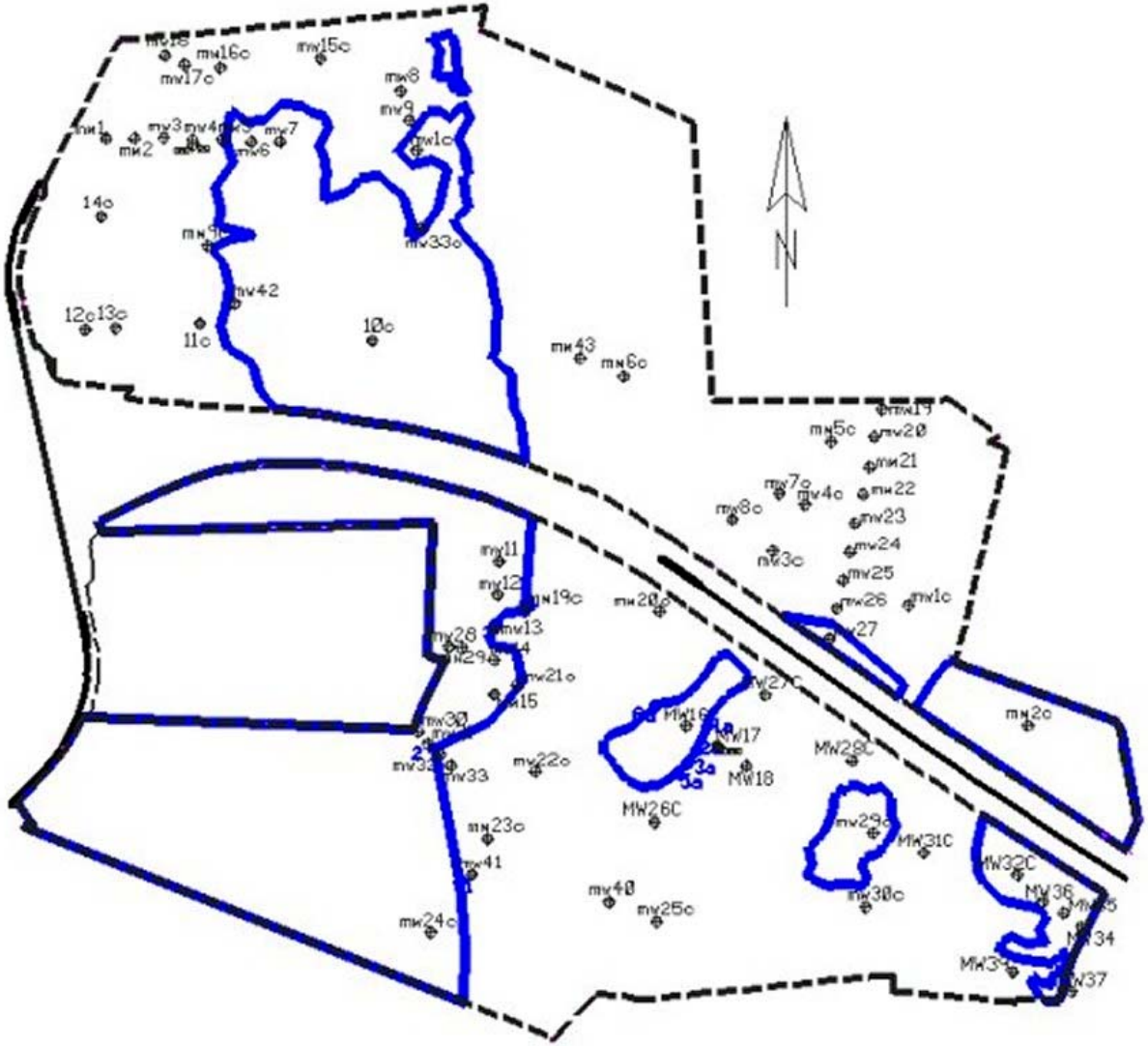
Because Mildred Woods is a large site, it is divided into sections according to gauge locations. Table 4 lists the location of each table and the gauges contained in each section. Borrow Pit 1 is located on the west side of the site. Borrow Pit 2 is located on the east side of the site.

Appendix A contains a plot of the groundwater depth for each monitoring gauge during the 2002 growing season. Precipitation events, recorded by the onsite rain gauges, are included on each graph as bars. These monitoring gauge graphs are designed to show the reaction of the groundwater level to specific rainfall events. If the gauge shows saturation for 5% or greater of the growing season, the maximum number of consecutive days is noted on each graph.

Table 4. Gauge Locations

Table Number	Location	# of Gauges	Gauge Numbers
5	Northwest Corner	11	MW 1 – 7, MW 15C-18C
6	Northern Area	3	MW 8 –10
7	Center of Mildred Woods	7	MW 11 – 15, MW 19C & 21C
8	Eastern Area	8	MW 16 – 18, MW 20C, 26C-29C
9	Northeast Corner	16	MW 19 – 27, MW 1C-5C, 7C, 8C
10	East of Borrow Pit 1	2	MW 28 – 29
11	Southeast of Borrow Pit 1	6	MW 30 – 33, MW 22C & 23C
12	West of Borrow Pit 2	8	MW 34 – 39, MW 31C & 32C
13	Lower Eastern Area	3	MW 40, MW 25C & 30C
14	South of Borrow Pit 1	2	MW 41, MW 24C
15	Lower Northwest Corner	6	MW 42, MW 11C-14C, 33C
16	Middle Northern Area	4	MW 43, MW 6C, 9C, 10C

Figure 3. Hydrologic Monitoring Gauge Location Map (Delineated areas shown in blue)



2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

The total number of consecutive days that the groundwater was within twelve inches of the surface was determined for each gauge. This number was converted into a percentage of the 233-day growing season. The results are presented in Tables 5 to 16. Note that specific gauge problems listed below tables are only for those gauges that did not meet their expected hydrology.

Table 5. Hydrologic Monitoring Results – Northwest Corner

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-1	≥ 12.5		✔			5.3
MW-2	≥ 12.5				✔	13.8
MW-3	≥ 12.5				✔	13.8
MW-4	≥ 12.5				✔	16.7
MW-5	≥ 12.5			✔		12.2
MW-6	0 ≤ 5	✔				1.2
MW-7	0 ≤ 5	✔				0.0
MW-15C	≥ 12.5				✔	16.7
MW-16C	≥ 12.5				✔	16.7
MW-17C	≥ 12.5				✔	16.7
MW-18C	≥ 12.5				✔	16.7

Nine of the eleven gauges in the northwest corner met their respective expected hydrology.

-Gauge 1 did not record data from Aug 1 to Sept 12, due to a malfunction.

Table 6. Hydrologic Monitoring Results – Northern Area

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-8	≥ 12.5				✔	36.9
MW-9	≥ 12.5			✔		12.2
MW-10	0 ≤ 5	✔				2.9

Two of the three gauges in the northern area met their respective expected hydrology.

Table 7. Hydrologic Monitoring Results – Center of Mildred Woods

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-11	≥ 12.5	✔				2.0
MW-12	≥ 12.5	✔				1.2
MW-13	≥ 12.5			✔		12.2
MW-14	≥ 12.5	✔				0.4
MW-15	≥ 12.5	✔				2.4
MW-19C	5 ≤ 12.5				✔	16.7
MW-21C	≥ 12.5	✔				4.1

Only one of the seven gauges in the center section met the expected hydrology.

-Gauge 12 did not record data from Jan 1 to Feb 6, due to dead batteries.
-Gauge 14 went down from Aug 2 to Oct 16, when it was replaced.
-Gauge 15 did not record valid data from Jan 1 to Feb 25, due to a malfunction.

Table 8. Hydrologic Monitoring Results – Eastern Area

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-16	0 ≤ 5	✔				0.4
MW-17	5 ≤ 12.5			✔		12.2
MW-18	≥ 12.5				✔	15.0
MW-20C	≥ 12.5				✔	17.1
MW-26C	≥ 12.5				✔	16.7
MW-27C	≥ 12.5				✔	13.0
MW-28C	≥ 12.5				✔	16.7
MW-29C	5 ≤ 12.5	✔				4.1

Seven of the eight gauges in the eastern area met or exceeded their respective expected hydrology.
-Gauge 29C stopped recording data from Jan 1 to Feb 25, and again from Aug 2 to Sept 12, when it was replaced.

Table 9. Hydrologic Monitoring Results – Northeast Corner

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-19	≥ 12.5				✔	16.3
MW-20	≥ 12.5				✔	17.1
MW-21	≥ 12.5				✔	24.8
MW-22	≥ 12.5				✔	13.0
MW-23	≥ 12.5				✔	12.1
MW-24	≥ 12.5				✔	16.3
MW-25	≥ 12.5				✔	13.8
MW-26	5 ≤ 12.5				✔	16.7
MW-27	0 ≤ 5			✔		8.5
MW-1C	5 ≤ 12.5				✔	16.7
MW-2C	5 ≤ 12.5	✔				.4
MW-3C	≥ 12.5				✔	17.1
MW-4C	≥ 12.5				✔	16.7
MW-5C	≥ 12.5				✔	16.7
MW-7C	≥ 12.5				✔	16.7
MW-8C	≥ 12.5				✔	27.6

Fifteen of the sixteen gauges in the northeast corner met or exceeded their respective hydrologic requirement.

Table 10. Hydrologic Monitoring Results – East of Borrow Pit 1

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-28	≥ 12.5			✔		12.2
MW-29	≥ 12.5			✔		8.5

None of the two gauges east of Borrow Pit 1 met expected hydrology.

-Gauge 29 did not record data from Jan 1- Feb 25, due to a malfunction.

Table 11. Hydrologic Monitoring Results – Southeast of Borrow Pit 1

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-30	5 ≤ 12.5	✔				2.4
MW-31	5 ≤ 12.5			✔		8.5
MW-32	5 ≤ 12.5			✔		12.2
MW-33	5 ≤ 12.5			✔		12.2
MW-22C	≥ 12.5				✔	16.7
MW-23C	≥ 12.5				✔	14.6

Five of the six gauges southeast of Borrow Pit 1 met or exceeded expected hydrology.

Table 12. Hydrologic Monitoring Results – West of Borrow Pit 2

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-34	5 ≤ 12.5	✔				0.0
MW-35	5 ≤ 12.5	✔				.81
MW-36	5 ≤ 12.5	✔				1.2
MW-37	5 ≤ 12.5	✔				2.8
MW-38	5 ≤ 12.5			✔		8.5
MW-39	5 ≤ 12.5			✔		8.5
MW-31C	≥ 12.5				✔	13.0
MW-32C	5 ≤ 12.5		✔			6.5

Four of the eight gauges west of Borrow Pit 2 met the expected hydrology for the area.

Table 13. Hydrologic Monitoring Results – Lower Eastern Area

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-40	≥ 12.5			✔		12.2
MW-25C	≥ 12.5				✔	16.7
MW-30C	5 ≤ 12.5				✔	13.0

Two of the three gauges in the lower eastern area met expected hydrology.

Table 14. Hydrologic Monitoring Results – South of Borrow Pit 1

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-41	0 ≤ 5				✔	12.6
MW-24C	5 ≤ 12.5	✔				3.7

One of the two gauges south of Borrow Pit 1 greatly exceeded its expected hydrology, which was to show saturation for less than 5% of the growing season.

Table 15. Hydrologic Monitoring Results – Lower Northwest Corner

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-42	≥ 12.5			✔		8.5
MW-11C	≥ 12.5				✔	16.7
MW-12C	≥ 12.5				✔	16.7
MW-13C	≥ 12.5				✔	16.7
MW-14C	≥ 12.5		✔			6.5
MW-33C	≥ 12.5				✔	16.7

Four of the six gauges in the lower northwest corner met or exceeded the expected hydrology for the area.

-Gauge 14C did not record data from Feb 22 to May 21, when it was replaced.

Table 16. Hydrologic Monitoring Results – Middle Northern Area

Gauge	Expected %	<5%	5 - 8%	8 - 12.5%	> 12.5%	Actual %
MW-43	≥ 12.5				✔	15.0
MW-6C	5 ≤ 12.5				✔	13.0
MW-9C	5 ≤ 12.5				✔	16.7
MW-10C	≥ 12.5			✔		9.4

Three of the four gauges in the middle northern area met or exceeded the expected hydrology.

-Gauge 10C did not record data from Aug 9 to Sept 12, due to battery failure

Figure 4 is a graphical representation of the 2002 hydrologic results.

2.3.2 Climatic Data

Figure 5 is a comparison of 2002 monthly rainfall to historical precipitation for the area. The two lines represent the 30th and 70th percentiles of monthly precipitation for Tarboro, NC, located in Edgecombe County. The NC State Climate Office provided both the historical and the current precipitation totals. The bars are monthly rainfall totals for portions of 2001 and 2002, collected since the publication of the 2001 annual report. Because data from November and December 2002 were not available at the time this report was published, the 2002 rainfall data encompasses precipitation totals through October.

Overall, the Tarboro area had an average climatic year in terms of rainfall totals. Only four of the twelve months yielded below average rainfall amounts. The site received below average totals in November (2001), December (2001), February, and May, while it received above average precipitation in January and July.

2.4 Conclusions

Of the 76 gauges currently on the site, 53 gauges either met or exceeded their respective hydrologic expectations during a year with average rainfall. Most of the gauges that did not meet the hydrologic expectations for the 2002 growing season are either located adjacent to the borrow pits or within the center area of the site.

Figure 4. Hydrologic Monitoring Results 2002

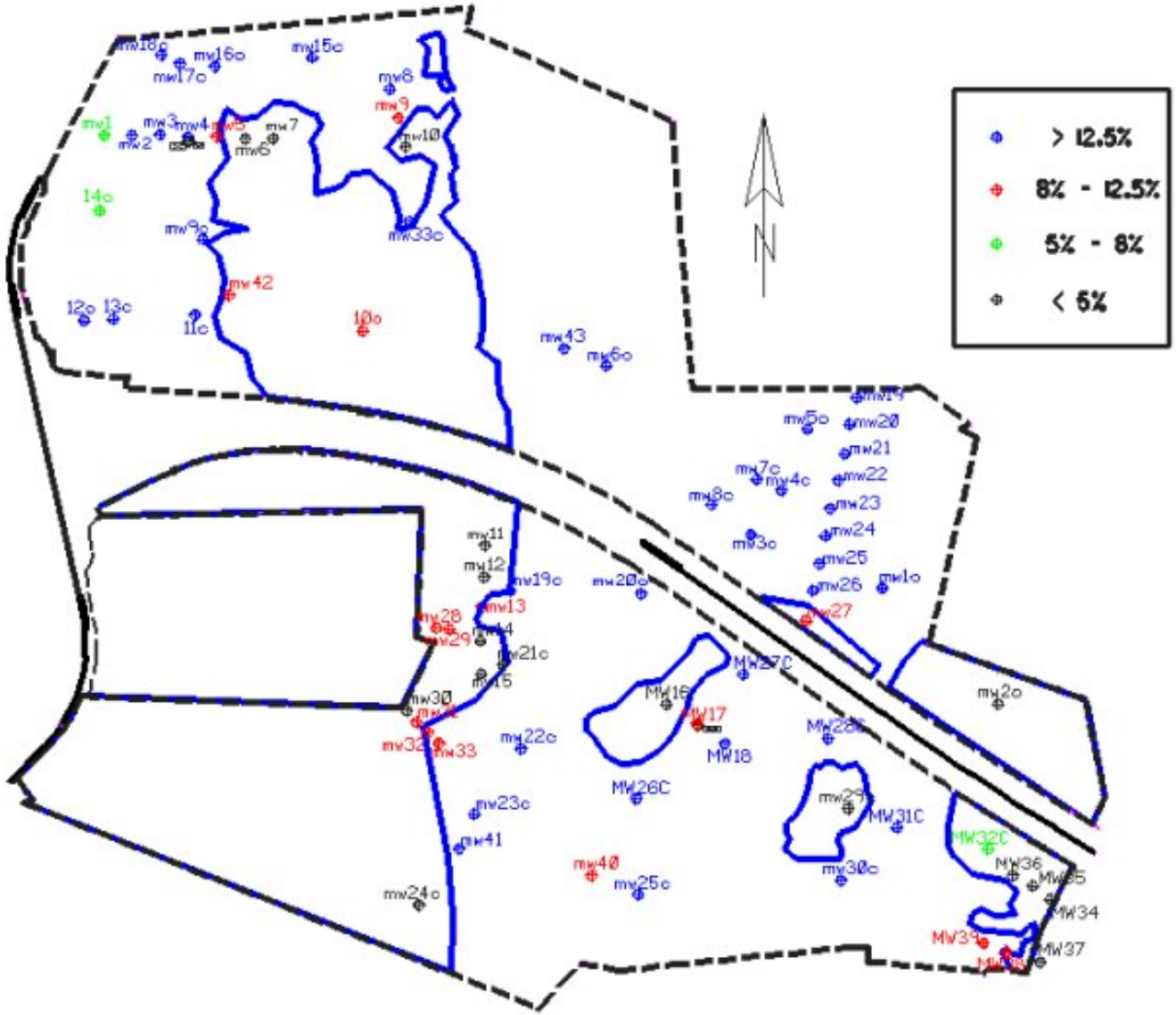
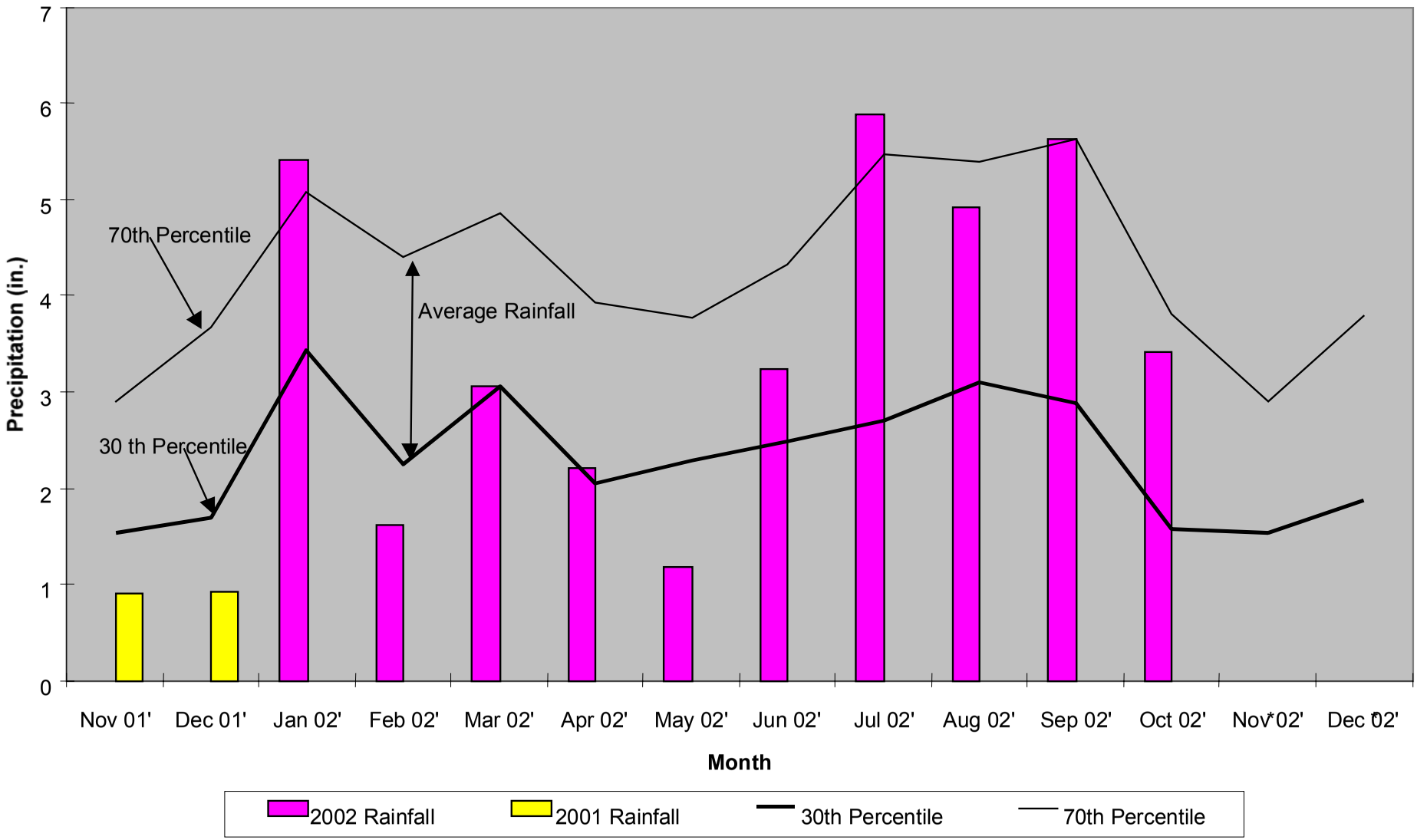


Figure 5: Mildred Woods 30-70 Percentile Graph Tarboro, NC



3.0 VEGETATION

3.1 Success Criteria

Success Criteria states that there must be a minimum mean density of 320 trees per acre of approved target species surviving for at least three years. Minimum of 6 hardwood species with no more than 20% of any one species and up to 10% of site species may be comprised of softwood species.

3.2 Description of Planted Areas

The following plant communities were planted in the Wetland Restoration Area:

Zone 1: Swamp Forest (approximately 37 acres)

Nyssa aquatica, Water Tupelo
Taxodium distichum, Bald cypress
Fraxinus pennsylvanica, Green Ash
Quercus laurifolia, Laurel Oak
Nyssa sylvatica var. biflora, Swamp Tupelo
Carya aquatica, Water Hickory
Platanus occidentalis, American Sycamore
Quercus lyrata, Overcup Oak

Zone 2: Wet Hardwood Forest (approximately 214 acres)

Fraxinus pennsylvanica, Green Ash
Quercus falcata var. pagodaefolia, Cherrybark Oak
Quercus michauxii, Swamp Chestnut Oak
Quercus phellos, Willow Oak
Quercus nigra, Water Oak
Liriodendron tulipfera, Tulip Poplar
Quercus laurifolia, Laurel Oak
Ulmus americana, American Elm
Quercus falcata, Swamp Red Oak

Zone 3: Dry-Mesic Oak/Hickory Forest (approx. 108 acres)

Quercus alba, White Oak
Quercus falcata, Swamp Red Oak
Carya tomentosa, Mockernut Hickory
Carya glabra, Pignut Hickory
Quercus stellata, Post Oak
Quercus nigra, Water Oak

Zone 4: Long-Leaf Pine-Oak/Hickory (approximately 11 acres)

Pinus palustris, Longleaf Pine
Quercus marilandica, Blackjack Oak
Quercus velutina, Black Oak
Quercus stellata, Post Oak
Carya tomentosa, Mockernut Hickory
Carya glabra, Pignut Hickory

Zone 5: Atlantic White Cedar Test Area (approximately 2 acres)

Chamaecyparis thyoides, American White Cedar

3.3 Results of Vegetation Monitoring

Table 17. Vegetation Monitoring Statistics, by plot

Plot #	Overcup Oak	Green Ash	Tulip Poplar	Cherrybark Oak	Swp. Chestnut Oak	Willow Oak	Water Oak	Laurel Oak	Black Oak	Blackjack Oak	Longleaf Pine	Hickory	Baldcypress	Swp. Blackgum	Sycamore	Water Tupelo	Southern Red Oak	White Oak	Post Oak	Total (7 year)	Total (at planting)
2		5		4	1															10	27
3		1		2	9	5	4	1				1								23	23
4				3	12	4		1												20	27
5		2	1	6	12	3	1	2				3								30	31
6		4		11	7	6														28	31
7	1								4	3	1	5								14	22
8		8											12	3	1	4				28	28
9		2		4		16	3													25	29
10			1					1				4			1		11	11		29	29
16				10								4			1		2			17	22
17		1		1	9	13		2				22			1					27	28
18	1	2											7			1				11	21
20		2			3									2						7	21
21		1	3	1	5	2														12	21

Site Notes: Other species noted: sweetgum, trumpet creeper, broomsedge, *Juncus* sp., ragweed, *Aster* sp., volunteer tulip poplar, volunteer hickory, fennel, goldenrod, pine, foxtail, wax myrtle, elm, *Carex* sp., giant cane, woolgrass, devil's walking stick, briars, magnolia, pokeweed, winged sumac, grapevine, smartweed, sicklepod, *Pluchea* sp., black willow, and switchgrass. Plots 1, 11-15, and 28 have not been monitored because the plot locations are in existing woods. Plot 20 was monitored again this year. Few trees were found due to heavy competition. Plot 19 was not monitored because of heavy competition. It was noted that certain areas within the site consisted of heavy natural regeneration of sweet gum, pine, and red maple. Overall, the mitigation site is performing well in terms of vegetation survival.

3.4 Conclusions

Of the 593 acres of this site, approximately 372 involved tree planting. There were 20 plots established throughout the planting areas, encompassing all plant communities. The 2002 vegetation monitoring of the planted area revealed an average density of 513 trees per acre, which is well above the 320 trees per acre required by the minimum success criteria.

NCDOT has met with Ron Myers, a Hardwood Specialist with the North Carolina Forest Service on the sweetgum and pine issue. Sample plots were set and tree populations were counted throughout the site. The plots were 0.02 acre in size and were set at approximately 132 feet apart. Planted species, pine and sweetgum were the only trees counted in the samples. Only species three feet tall or higher were counted. It was noted from the sample plots that the outer perimeter of the site consisted of the most sweetgum and pine vegetation.

NCDOT proposes to discontinue vegetation monitoring at the Mildred Woods Mitigation Site, as the planted species have continued to show excellent survival rates.

4.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

Monitoring of the Mildred Woods Mitigation Site yielded the following:

- Hydrologic monitoring indicated that of the 76 gauges currently on site, 53 gauges either met or exceeded their respective hydrologic expectations.
- The majority of the gauges not meeting their expected success criteria are located adjacent to either of the borrow pits or within the center area.
- It can be seen from previous data that gauges meeting their expected hydrology in years past are continuing to meet their expected hydrology.
- The vegetation monitoring of the planted area revealed an average density of 513 trees per acre, which is well above the 320 trees per acre required by the minimum success criteria.

Based on the 2002 monitoring results, NCDOT intends:

- To develop a proposal regarding nuisance vegetation per discussions with resource agency personnel.
- Once agency concurrence is obtained, the proposal will be implemented in 2003 in order to facilitate the closing of the site.

APPENDIX A

DEPTH TO GROUNDWATER CHARTS

APPENDIX B

SITE PHOTOS AND
PHOTO AND PLOT LOCATIONS MAP

MILDRED WOODS

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

2002

MILDRED WOODS

Photo 7

Photo 8

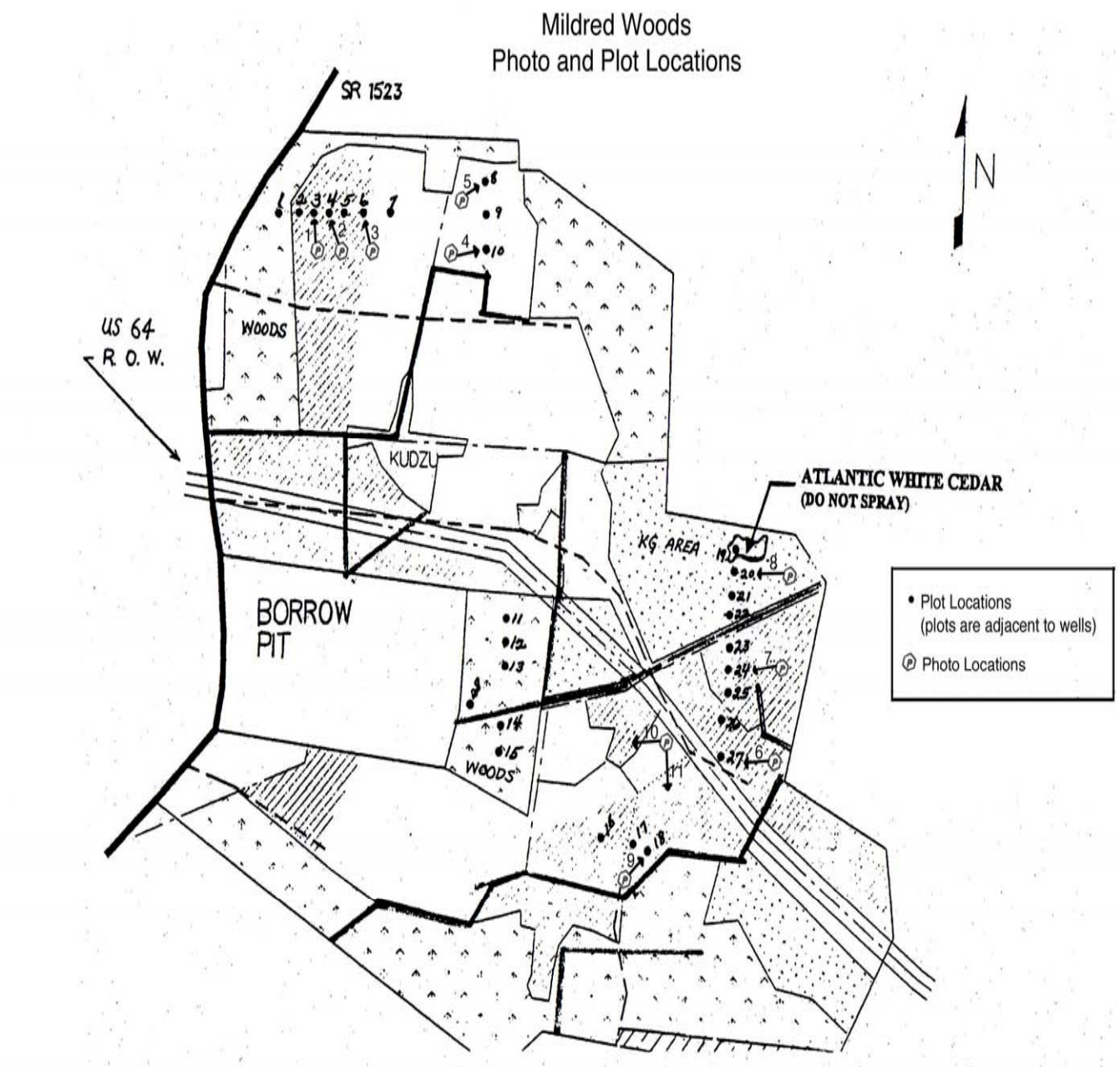
Photo 9

Photo 10

Photo 11

2002

MILDRED WOODS



APPENDIX C

HYDROLOGIC MODIFICATION AGENCY NOTIFICATION LETTER, AUGUST 23, 2002

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

1501 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1501

LYNDO TIPPETT
SECRETARY

August 23, 2002

Raleigh Regulatory Field Office
U.S. Army Corps of Engineers
6508 Falls of Neuse Road
Suite 120
Raleigh, North Carolina 27615

Attention: Mr. Eric Alsmeyer

Subject: Remediation Activities at Mildred Woods Mitigation Site in Edgecombe County, State Project No. 6.099008T, TIP No. R-2111/R-2112A. COE Action ID 200220237.

The North Carolina Department of Transportation (NCDOT) proposed to complete remediation efforts at the Mildred Woods Mitigation Site in Edgecombe County utilizing Nationwide Permit 27, which was issued on December 10, 2001. The final remediation work, as described in the NW-27 permit, involved the installation of a concrete flashboard riser in the outlet ditch on the south side of the borrow pond.

Based on the initial survey conducted June 1997, the original plan proposed to install a concrete flashboard riser to maintain a maximum water surface elevation of 43 feet MSL, on the Mildred Woods Mitigation Site. In February 2002, NCDOT conducted a new survey, which concluded an elevation of 44.16. At that time NCDOT began to question the need for such a structure in the outlet ditch of the borrow pond. On May 7, 2002, NCDOT and the regulatory agencies met on-site to review the proposal. During that visit, it was concluded that some bank stabilization was needed at the entrance of the outlet ditch, however the concrete flashboard riser was not necessary. Also, all were in agreement that the current water surface elevation that has been maintained in the borrow pond had caused no noticeable problems with the existing pond nor with the interchange at SR 1523 (Shiloh Farm Road).

Instead, the Department proposed to stabilize the entrance of the outlet ditch using class-B rip-rap and filter fabric. Because of the minimal length of rip-rap, this activity was covered under Nationwide Permit 13 (Bank Stabilization) and requires that the Department notify the U.S. Army Corps of the Engineers upon successful completion of the activity. The NCDOT

Edgecombe County Maintenance Forces completed this work on mid June 2002. (See attachment photo documentation)

If you have any questions or need any additional information, please contact Randy Griffin at (919) 733-7844 Ext. 294

Sincerely,

V. Charles Bruton, Ph.D.
Manager Office of Natural Environment
Project Development and Environmental
Analysis Branch

Cc: file
Mr. John Hennessy, NCDWQ
Mr. Howard Hall, USFWS
Mr. David Cox, NCWRC
Mr. Jim Trogdon, PE, Division Engineer
Mr. Bobby Lewis, PE, Highway Maintenance Engineer

Northeast at entrance to outlet.

Southwest across Borrow Pond towards outlet ditch.